### Louisiana Department of Environmental Quality Office of Environmental Services

### STATEMENT OF BASIS

For

Activity Number: PER20050006 Permit No. 2565-V3

Alumina Unit
Lake Charles Chemical Complex
Agency Interest No. 3271
Sasol North America Inc.
Westlake, Calcasieu Parish, Louisiana

### I. APPLICANT

### Company

Sasol North America Inc. 2201 Old Spanish Trail Westlake, Louisiana 70669

### **Facility**

Alumina Unit, Lake Charles Chemical Complex 2201 Old Spanish Trail, Westlake, Calcasieu Parish, Louisiana UTM Coordinates: 473.00 kilometers East and 3346.13 kilometers North, Zone 15

### II. FACILITY AND CURRENT PERMIT STATUS

Alumina slurry from offsite sources, the Alcohol Unit, or the hydrothermal reactor is fed to two spray dryers or the dispal dryer to produce hydrated alumina (Al<sub>2</sub>O<sub>3</sub>.H<sub>2</sub>O) which is shipped for sales or further processed to produce calcinated alumina (Al<sub>2</sub>O<sub>3</sub>). The spray dryers are fueled by natural gas, hydrogen gas, or off gas from Reactor DC-401B of the Alcohol Unit while the dispal dryer utilizes heat from steam.

The Alumina Unit is considered to be a part of the Lake Charles Chemical Complex, which is owned and operated by Sasol North America Inc. Active and pending permits for the complex are as follows:

Permit Number	Units or Sources	Date Issued
2325-V2	Ethoxylation Unit	August 17, 2004
2743-V1	Ethylene Unit	July 28, 2003
2825	Research and Development	November 26, 2002
2565-V2	Alumina Unit	April 19, 2002
2742-V0	Laboratories Unit	September 27, 2001
PSD-LA-644	Alumina Unit	September 19, 2000
2901-V0	Steam Generating Unit	January 5, 2005

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Permit Number	Units or Sources	Date Issued
2865-V0	Alcohol Unit	October 18, 2004
2894-V0	Linear Alkyl Benzene Unit	March 15, 2005
2896-V0	Normal Paraffins	February 9, 2006
2895-V0	Active Sludge Unit	January 23, 2006
2865-V1	Alcohol Unit	Application Pending

### III. PROPOSED PERMIT / PROJECT INFORMATION

### **Proposed Permit**

A Part 70 operating permit application and Emission Inventory Questionnaire dated March 17, 2005, were submitted requesting a Part 70 operating permit.

A notice requesting public comment on the permit was published in *The Advocate*, Baton Rouge, and in the local newspaper. A copy of the public notice was mailed to concerned citizens listed in the Office of Environmental Services Public Notice Mailing List. The application and proposed permit were submitted to the Calcasieu Parish Library. The proposed permit was submitted to US EPA Region VI. All comments will be considered prior to the final permit decision.

### **Project description**

SASOL North America requests a Part 70 operating permit renewal for the Alumina Unit. SASOL also proposes to implement the Calciner Expansion project and the TAM Unit project. The Calciner Expansion project will include a second calciner and associate equipment. The proposed TAM Unit will produce alumina slurry from aluminum metal and hexanol. Emissions from the unit were recalculated to reflect updated emissions factors and actual operating conditions.

### **Permitted Air Emissions**

Permitted emissions from the unit in tons per year are as follows:

<u>Before</u>	<u>After</u>	<u>Change</u>
124.41	127.49	+ 3.08
6.60	4.76	- 1.84
58.08	60.37	+ 2.29
48.58	50.10	+ 1.52
39.82	58.84	+ 19.02
10.62	13.15	2.53
< 0.01	0.12	+0.12
	124.41 6.60 58.08 48.58 39.82 10.62	124.41     127.49       6.60     4.76       58.08     60.37       48.58     50.10       39.82     58.84       10.62     13.15

### Prevention of Significant Deterioration (PSD) Applicability

Emissions of the criteria pollutants from the project will not increase more than their PSD significance levels. Therefore, PSD analysis was not required.

### Maximum Achievable Control Technology (MACT) requirements

Limiting ethanol content in the slurry feed to the dryers is determined as MACT for the dryers.

### Air Modeling Analysis

Emissions from the Activated Sludge Unit are not expected to cause or to contribute to any National Ambient Air Quality Standards (NAAQS) or Ambient Air Standards (AAS) exceedances.

Dispersion Model Used: ISCST3

Pollutant	Averaging	Calculated Maximum Ground	Ambient Air
	Period	Level Concentration	Standard (AAS)
		(μg/m³)	(μg/m <sup>3</sup> )
1,2-Dichloroethane	Annual	0.29	3.85
Benzene	Annual	11.9	12.0
Ammonia	8-hour	370	640

### **General Condition XVII Activities**

ID	Description	Frequency (times/year)
GC17-1	Product Sampling	66,688
GC17-2	Pump Maintenance	144
GC17-3	Rupture Disc Inspection	36
GC17-4	Tank Vent Inspection	6
GC17-5	Control Device Inspection	84
GC17-6	Control Device Service	60
GC17-7	Tank Sludge Removal	188
GC17-9	Tank Gauging	1250
GC17-10	Instrument Maintenance	1250

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Activity Number: PER20050006 Permit No. 2565-V3

ID	Description	Frequency (times/year)
GC17-11	Vessel and Equipment Preparation	36
GC17-12	Sump Solids Removal	62
GC17-13	Pipelines Equipment Clearing	1590
GC17-16	Catalyst Recharging	40
GC17-17	Filter and Strainer Changeouts	10688
GC17-19	Valve Maintenance	300
GC17-21	Miscellaneous Equipment Maintenance	160
GC17-22	Miscellaneous Equipment Cleaning	152
GC17-24	Temporary Storage	11080
GC17-25	Vacuum Truck Operations	82
GC17-26	Process Activities	26011

### **Insignificant Activities (LAC 33:III.501.B.5)**

ID	Description	Volume (gallons)	Citation
FB-CHILL	Chilled Water Return Tank		A.3
FB-KOH	KOH Solution Totes		A.4
FB-ORG	Low Volatile Organic Totes		A.3
SEACON1	Sea Container Tank 1		A.3
SEACON2	Sea Container Tank 2		A.3
WO-DRUM	Oil Mist Drum		B.16

### IV. PERMIT SHIELDS

The Permit does not include any Permit Shields

### V. PERIODIC MONITORING

The Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are provided in the Facility Specific Requirements Section of the proposed permit.

### VI. APLICABILITY AND EXEMPTIONS OF SELECTED SUBJECT ITEMS

ID No:	Requirement	Status	Citation	Explanation
ARE005	LAC 33:III.2123	Exempt	LAC 33:III.2123.B	Maintenance Activities
EQT340, EQT371	LAC 33:III.2103 -	Does not	LAC	Vapor Pressure < 1.5
EQT372	Storage of VOC	apply	33:III.2103.A	psia
	40 CFR 60.110b -	Docs not	40 CFR	Vapor Pressure < 0.51
	NSPS for Tanks	apply	60.110b(b)	psia
EQT341, EQT342,	LAC 33:III.2103 -	Does not	LAC	Vapor Pressure < 1.5
EQT345	Storage of VOC	apply	33:III.2103.A	psia
EQT370	40 CFR 60.110b -	Does not	40 CFR	Volume < 20,000
-	NSPS for Tanks	apply	60.110b(b)	gallons
EQT343, EQT344	LAC 33:III.2103 -	Does not	LAC	Vapor Pressure < 1.5
	Storage of VOC	apply	33:III.2103.A	psia
	LAC 33:III.5109 –	Does not	LAC	No emissions of Class I
	MACT Requirements	apply	33:III.5109.A	or II TAPs
	40 CFR 60.110b -	Does not	40 CFR	No construction or
	NSPS for Tanks	apply	60.110b(b)	modification after July
				23, 1984
EQT346, EQT347	40 CFR 64 -	Does not	40 CFR 64	The baghouses are an
EQT350 thru	Compliance Assurance	apply		integral part of the
EQT358	Monitoring			process
EQT348, EQT349	LAC 33:III.5109 -	Does not	LAC	MACT is not required
	MACT Requirements	apply	33:III.5109	– emits Class III TAPs
				only
	40 CFR 64	Does not	40 CFR 64	The baghouses are an
		apply		integral part of the
	Monitoring	<u> </u>		process
EQT359	LAC 33:III.1503.	Exempt	LAC	SO <sub>2</sub> emissions < 250
	Emission Standards for		33:III.1503.C	tons/year
	Sulfur Dioxide	<u> </u>	ļ	00 1 1 105
	LAC 33:III.1511 CEM	Exempt	LAC	SO <sub>2</sub> emissions < 100
	for SO <sub>2</sub>	<u></u>	33:III.1511.A	tons/year
	LAC 33:III.2115 -	Does not	LAC	Subject to MACT
#	Waste Gas Disposal	apply	33:III.2115	
	LAC 33:III.2147 –	Does not	LAC	The Alumina Unit is
	VOC emissions from	apply	33:III.2147	not a SOCMI process
	SOCMI Processes			
	40 CFR 60 Subparts III	Does not	1	The Alumina Unit is
	and RRR	apply	40 CFR 60.700	not a SOCMI process

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ID No:	Requirement	Status	Citation	Explanation
EQT360, EQT361 EQT362, EQT369, EQT377	LAC 33:III.1503. Emission Standards for Sulfur Dioxide	Exempt	LAC 33:III.1503.C	SO <sub>2</sub> emissions < 250 tons/year
	LAC 33:III.1511 CEM for SO <sub>2</sub>	Exempt	LAC 33:III.1511.A	SO <sub>2</sub> emissions < 100 tons/year
EQT363, EQT364, EQT378, FUG007	LAC 33:III.5109 – MACT Requirements	Does not apply	LAC 33:III.5109	MACT is not required - emits Class III TAPs only
EQT369	LAC 33:III.1503. Emission Standards for Sulfur Dioxide	Exempt	LAC 33:III.1503.C	SO <sub>2</sub> emissions < 250 tons/year
	LAC 33:III.1511 CEM for SO <sub>2</sub>	Exempt	LAC 33:III.1511.A	SO <sub>2</sub> emissions < 100 tons/year
	LAC 33:III.2115 – Waste Gas Disposal	Does not apply	LAC 33:III.2115	Subject to MACT
GRP040	40 CFR 63 Subpart FFFF - MON	Does not apply	40 CFR 63.2435(b)(1)	Does not produce chemicals listed in 63.2435(b)(1)
The above table provides explanation for both the exemption status or non-applicability of a source cited by 2 or 3 in the matrix presented in Section X of this permit				

### VII. STREAMLINED REQUIREMENTS

The Permit does not include any streamlined requirements.

### VIII. GLOSSARY

Best Available Control Technologies (BACT) - An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this part which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

CAM - Compliance Assurance Monitoring rule - A federal air regulation under 40 CFR Part 64

Carbon Black - A black colloidal substance consisting wholly or principally of amorphous carbon and used to make pigments and ink.

Carbon Monoxide (CO) – (Carbon monoxide) a colorless, odorless gas produced by incomplete combustion of any carbonaceous (gasoline, natural gas, coal, oil, etc.) material.

Cooling Tower – A cooling system used in industry to cool hot water (by partial evaporation) before reusing it as a coolant.

Continuous Emission Monitoring System (CEMS) – The total combined equipment and systems required to continuously determine air contaminants and diluent gas concentrations and/or mass emission rate of a source effluent.

Cyclone – A control device that uses centrifugal force to separate particulate matter from the carrier gas stream.

Duct Burner – A device that combusts fuel and that is placed in the exhaust duct from another source (such as a stationary gas turbine, internal combustion engine, kiln, etc.) to allow the firing of additional fuel to heat the exhaust gases before the exhaust gases enter a steam generating unit.

Federally Enforceable Specific Condition - A federally enforceable specific condition written to limit the potential to Emit (PTE) of a source that is permanent, quantifiable, and practically enforceable. In order to meet these requirements, the draft permit containing the federally enforceable specific condition must be placed on public notice and include the following conditions:

- A clear statement of the operational limitation or condition which limits the source's potential to emit;
- Recordkeeping requirements related to the operational limitation or condition;
- A requirement that these records be made available for inspection by LDEQ personnel;
- A requirement to report for the previous calendar year.

Grandfathered Status-Those facilities that were under actual construction or operation as of June 19, 1969, the signature date of the original Clean Air Act. These facilities are not required to obtain a permit. Facilities that are subject to Part 70 (Title V) requirements lose grandfathered status and must apply for a permit.

Heat Recovery Steam Generator (HRSG) – A steam generator that recovers exhaust heat from a gas turbine, and provides economizing and steam generation surfaces.

Hydrogen Sulfide  $(H_2S)$  - A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the action of acids on metallic sulfides, and is an important chemical reagent.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III. Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

NESHAP - National Emission Standards for Hazardous Air Pollutants -Air emission standards for specific types of facilities, as outlined in 40 CFR Parts 61 through 63

Nitrogen Oxides (NO<sub>x</sub>) - Compounds whose molecules consists of nitrogen and oxygen.

Nonattainment New Source Review (NNSR) - A New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. Nonattainment NSR is designed to ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

NSPS - New Source Performance Standards - Air emission standards for specific types of facilities, as outlined in 40 CFR Part 60

Organic Compound - Any compound of carbon and another element. Examples: Methane  $(CH_4)$ , Ethane  $(C_2H_6)$ , Carbon Disulfide  $(CS_2)$ 

Part 70 Operating Permit- Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit:  $\geq 10$  tons per year of any toxic air pollutant;  $\geq 25$  tons of total toxic air pollutants; and  $\geq 100$  tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM<sub>10</sub>- Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) - The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.